Prepared for:

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Wilmington, Delaware 19894-0001

REVISION 1
WORK PLAN
SEDIMENT REMOVAL IN THE OUTFALL DITCH AND CULVERT

TERRY CREEK SITE
BRUNSWICK, GEORGIA

Prepared by:

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Project Number GQ0270-02

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1. INTRODUCTION

1.1 Terms of Reference

This work plan was prepared for Hercules Incorporated (Hercules) in support of a maintenance activity to be performed at their facility in Brunswick, Georgia. Specific actions addressed in this document include removal of sediment from a culvert and cleaning of a portion of an outfall channel, both at the facility. The general scope of work covered by this work plan was discussed during a 17 July 1997 meeting between Hercules and the U.S. Environmental Protection Agency Region 4 Emergency Response Group (USEPA) in Atlanta. This work plan was prepared by Dr. J.F. Beech, P.E. and was peer reviewed by Mr. Charlie A. Spiers, P.G. and Dr. Rudy Bonaparte, P.E.

1.2 Purpose and Scope

Surface water and plant non-contact cooling-process water at the Hercules plant is conveyed through a ditch system which terminates at one discharge point. The combined flow from the facility enters a box culvert approximately 200 ft long and 8 ft wide which conveys the water beneath U.S. Highway 17 to an outfall ditch that empties into Dupree Creek (Figure 1). The outfall ditch is approximately 900 ft long and 100 ft wide. A weir, located at the mid point of the outfall ditch, controls the quality of flow into Dupree Creek.

Hercules, as part of routine maintenance, cleans the ditches at the facility and the portion of the outfall ditch between the culvert and the weir. USEPA has expressed a concern that sediments in the culvert may contain toxaphene. While no sampling of these sediments has been performed, Hercules has agreed to clean the culvert as part of routine maintenance. Once the culvert has been cleaned, maintenance removal of sediment in the outfall ditch between the culvert and the weir will be performed. This maintenance activity will be a part of a removal action anticipated for the Terry Creek site.

This work plan covers sediment removal activities for the culvert and outfall ditch. The scope of the work plan includes: (i) sediment removal procedures, (ii) material

staging requirements; (iii) sampling and analysis procedures to establish appropriate disposal requirements for excavated material; and (iv) sediment handling plan.

1.3 Organization

The remainder of this work plan is organized as follows:

- sediment removal procedures and material staging requirements are presented in Section 2;
- sampling and analysis procedures are presented in Section 3;
- the sediment handling plan is presented in Section 4; and
- references cited in the plan are presented in Section 5.

2. REMOVAL PLAN

2.1 Overview

This section of the work plan presents the procedures to be followed by the contractor for removing sediment from the culvert, excavating sediment from the west end of the outfall ditch, and staging of the excavated material. It is understood that Hercules may self-perform the work using their own resources. The anticipated work activities are described in more detail in this section.

2.2 Removal of Sediment in Culvert

Accumulated sediment in the culvert will be removed using a crane and bucket. The anticipated steps are outlined below. These steps may be modified to account for field conditions encountered while performing the work. The required steps are as follows:

- place the bucket at the west (upstream) end of the culvert;
- pass a cord through the culvert by tying the cord to a float and allowing the water in the ditch system to transport the float to the downstream end of the culvert;
- use the cord to pull a rope through the culvert;
- use the rope to pull a steel cable through the culvert;
- attach the cable to the bucket and attach a retrieving cable to the rear of the bucket;
- position the boom of the crane perpendicular to the culvert with a system of pulleys to allow the cable to be pulled through the culvert (Figure 2);
- slowly pull the bucket through the culvert;

- repeat the above steps, as needed to clean out the culvert; and
- during sediment removal operations, sample the water in the ditch (upstream and downstream of removal area) for total suspended solids (TSS) for comparison to National Pollution Discharge Elimination System (NPDES) permit criterion for this parameter.

As a result of these procedures, sediment in the bucket will be deposited in the outfall ditch to the immediate east of the outfall for a brief period of time. This sediment will be removed from the outfall ditch as part of the sediment removal activity described in the next section.

2.3 Sediment Removal in the Outfall Ditch

Sediment will be removed from the section of the outfall ditch upstream of the weir using a crane and clam-shell bucket. A general permit from the U.S. Army Corps of Engineers (USACE) may be required before work begins. Removal of the sediment will require dredging from both sides of the outfall ditch. The procedure for both sides is outlined below:

- clear sufficient brush along each side of the outfall ditch to allow crane access;
- place mats as needed;
- starting at the culvert, remove sediments from center to edge of outfall ditch;
- place removed sediment on sediment dewatering staging areas; and
- dress the banks on both sides up to the water mark.

2.4 Sediment Dewatering and Staging

The sediment removed from the outfall ditch will be saturated. The sediment will be staged prior to further handling, to allow water to drain back into the outfall ditch

and for characterization purposes. The procedure for constructing the sediment dewatering and staging area is described below:

- place heavy-gauge plastic sheeting on the areas near the edges of the ditch to be used for dewatering and staging;
- secure the perimeter of the plastic sheeting in shallow (1 to 3 ft deep) anchor trenches;
- backfill the anchor trenches and build a berm with builder's sand to secure the sheeting; use this sand filled anchor trench as a perimeter drainage collection ditch; construct an outlet from the drainage collection ditch to the outfall ditch;
- install a silt fence parallel to the anchor trench (on the interior of the builder's sand) to provide initial gross filtering;
- place wet sediment removed from the outfall ditch on the staging areas and allow drainage from the sediment to flow through the silt fence and sand berm into the drainage collection ditch; and
- cover the staged material after initial drainage using plastic sheeting to improve hauling characteristics and control wind dispersion.

A schematic illustration of the layout of the sediment dewatering and staging areas is presented in Figure 3.

3. SAMPLING AND ANALYSIS

Water samples will be collected at the weir as part of sediment removal activities. The intent is to monitor the quantity of solids discharged during the sediment removal activities which may contain toxaphene. Water sample collection will commence prior to any sediment removal activity to establish background values. A grab water sample will be collected each day during removal activities. The conditions in the outfall ditch are such that the water elevation in the outfall ditch is above the bottom of the weir at high tide, and below the bottom of the weir at low tide. During incoming tides the discharge over the weir is retarded once the water elevation is above the bottom of the weir. The sample will be collected on a receding tide prior to the water elevation reaching the bottom of the weir because this is the most likely time for suspended sediment to be discharged over the weir. One water sample will be collected at the weir. The turbidity of the sample will be measured on site. An aliquot will be sent off-site for analysis of toxaphene. Additional water samples will be collected in the event the turbidity is significantly higher than previously measured.

Seven sediment samples (0-12 in. depth) will be collected from the bottom of the outfall ditch once sediment removal activities are complete. The approximate sample locations are shown on Figure 3. In addition, a representative number of aliquots will be collected from the dewatered sediment piles according to the method described for waste pile sampling in the USEPA Region 4 Environmental Investigation Standard Operating Procedures and Quality Assurance Manual (EISOPQAM) [USEPA, 1996]. An aggregate will be collected for USEPA's Toxicity Characteristic Leachate Procedures (TCLP) and other appropriate parameters for evaluating disposal options.

Water sampling procedures will be based on the EISOPQAM. Sediment sampling procedures for the outfall ditch and stockpiles will follow the methods for dredge spoil sampling described in the Sampling and Analysis Plan (SAP) prepared for the Terry Creek Site [GeoSyntec, 1997a]. Data quality objective Level IV will be used for analysis of the stockpile characterization samples. The data quality objectives are fully described in the Quality Assurance Project Plan (QAPP) prepared for the Terry Creek Site [GeoSyntec, 1997b]. The samples will be analyzed for toxaphene by USEPA SW-846 Method 8081. The extraction and analytical procedures for the analysis are also

described in the QAPP. Sampling activities will also be performed in accordance with the Health and Safety Plan prepared for the Terry Creek site [GeoSyntec, 1997c].

4. SEDIMENT HANDLING PLAN

Based on the analytical results, a decision will be made by Hercules to either: (i) contract for disposal of the dewatered sediment in an off-site commercial or municipal solid waste (Subtitle D) landfill (as was done previously); or (ii) place the dewatered sediment in the dredge spoil disposal area located on the east side of Dupree Creek. This decision will be made after Hercules receives and evaluates results generated from implementing the SAP for the Terry Creek site dredge spoil area [GeoSyntec, 1997a]. If analysis shows that the dredge spoil area contains elevated levels of toxaphene, the sediments from the outfall ditch can be placed in the dredge spoil area without adverse impact to the area. If the analysis of the dredge spoil sediments indicates relatively low levels of toxaphene, and if the sediments from the outfall ditch pass TCLP testing as anticipated, the sediments from the outfall ditch may be disposed of in the off-site landfill.

The sediments will be handled differently depending upon the final disposition of the material. If the sediments are to the disposed in an off-site landfill, a loader will be used to transfer the material from the stockpiles to haul trucks. The plastic undersheeting will also be disposed of along with the sediments. The haul trucks will be covered while transporting the sediments to the landfill. If the sediments are placed in the dredge spoil area, then a loader will be used to transfer the material to a barge. The barge will be moved to the temporary dock at the dredge spoil area. The sediments will be off-loaded to a designated area within the bermed portion of the dredge spoil area. There are several options being considered for the off-loading from the barge. These options include the use of:

- clam shell bucket with a crane;
- portable belt conveyor;
- pneumatic conveyor (if the sediment is dry enough); or
- other suitable methods.

5. REPORTING REQUIREMENTS

Following the completion of the activities described in this work plan, a report will be prepared and submitted to USEPA. The report will contain: (i) a description of the sediment removal activities; (ii) results of the sampling and analysis of the dewatered sediment piles; and (iii) handling and disposal procedures implemented for the removed sediments.

6. REFERENCES

GeoSyntec Consultants. *Sampling and Analysis Plan, Terry Creek Site Brunswick, Georgia.* 1997a.

GeoSyntec Consultants. *Quality Assurance Project Plan, Terry Creek Site Brunswick, Georgia.* 1997b.

GeoSyntec Consultants. *Health and Safety Plan, Terry Creek Site Brunswick, Georgia.* 1997c.

United States Environmental Protection Agency. *Environmental Investigations Standard Operating Procedures and Quality Assurance Manual*, U.S. EPA, Region 4, May 1996.

2 4 0258

CULVERT AND OUTFALL DITCH LOCATION

N

AERIAL PHOTOGRAPHY DATED 1994

100 0 100 200 Feet

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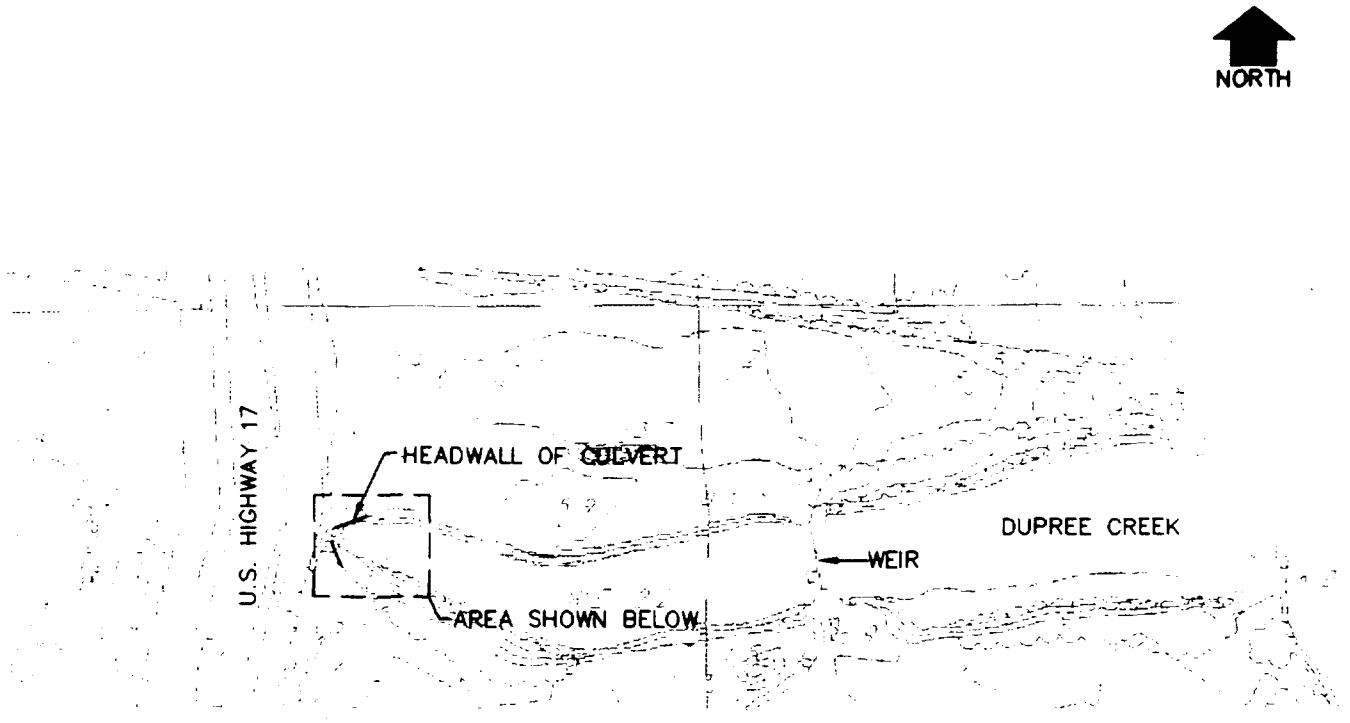
FIGURE NO.	1
PROJECT NO.	GL00270-02
DOCUMENT NO.	GA970989
FILE NO.	OUTFALL.APR

PULLEY AND DEADMAN ARRANGEMNT FOR CLEANING CULVERT



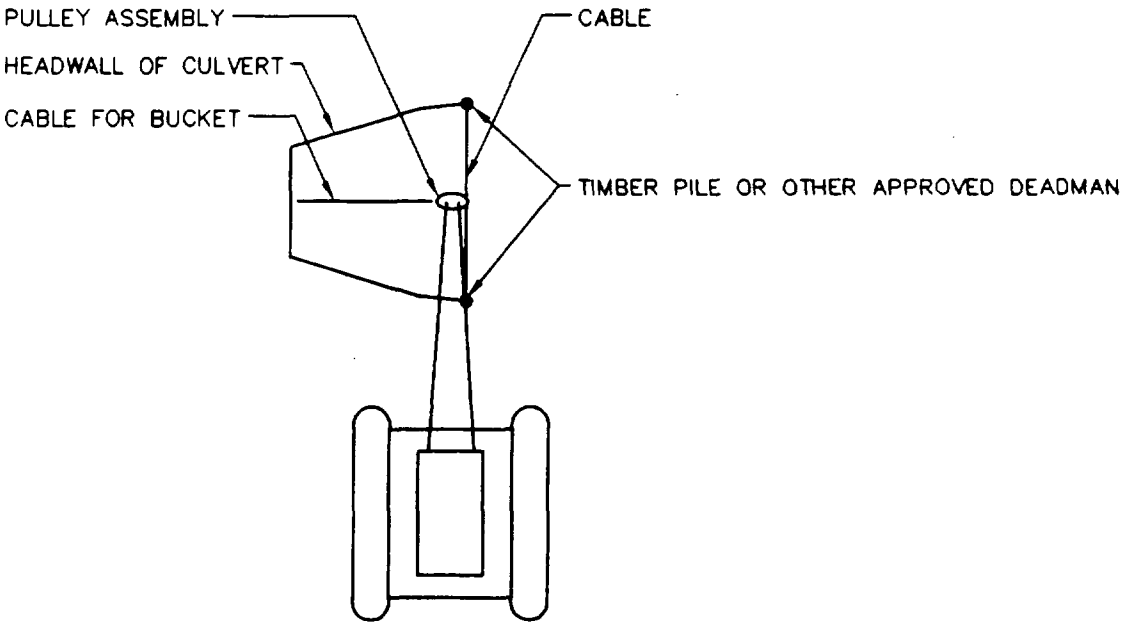


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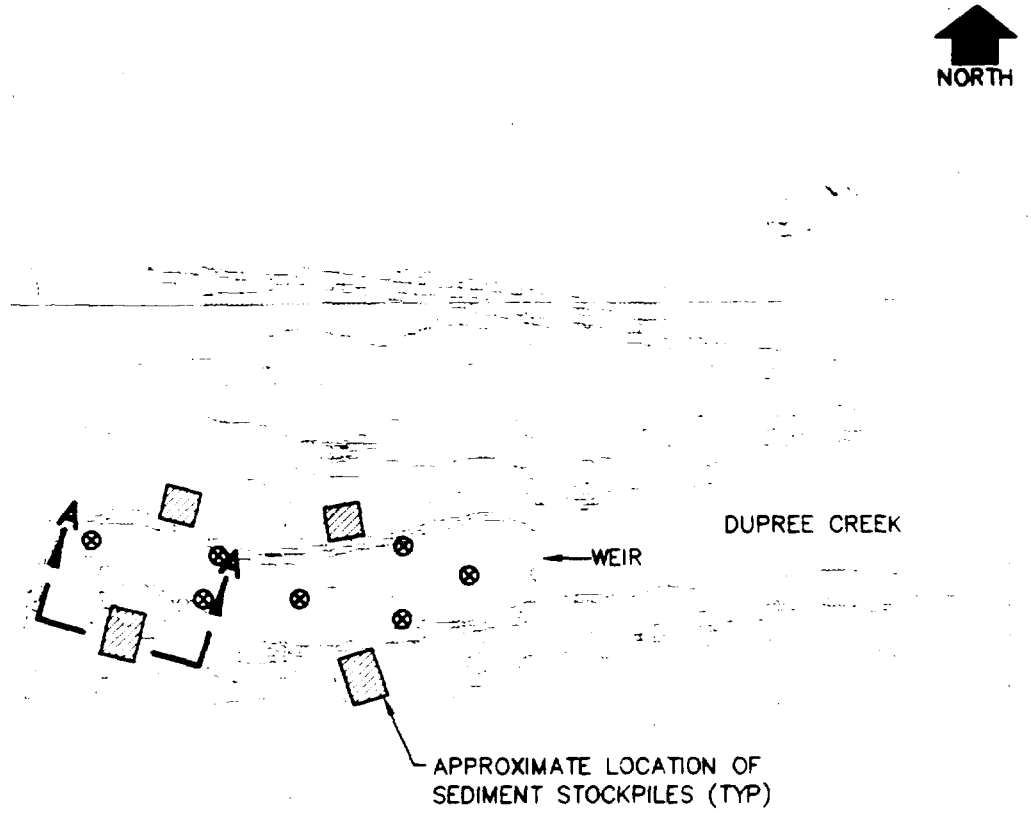
FIGURE NO.	2
PROJECT NO.	GQ0270-02
DOCUMENT NO.	
FILE NO.	0270F002

SEDIMENT STAGING AREAS

2 4 0260



LEGEND

⊗ POST REMOVAL SAMPLING POINTS

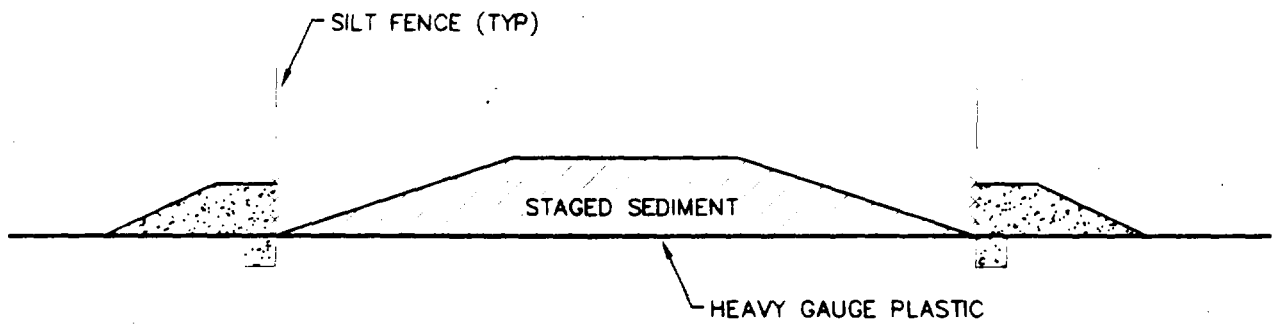


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FIGURE NO.	3
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DOCUMENT NO.	
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